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10/085,219

02/28/2002

David B. Kramer

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06/26/2006

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90 Forest Avenue  
Locust Valley, NY 11560

EXAMINER

MURPHY, RHONDA L

ART UNIT

PAPER NUMBER

2616

DATE MAILED: 06/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/085,219

Applicant(s)

KRAMER ET AL.

Examiner

Rhonda Murphy

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 18-22 is/are rejected.
- 7) ☒ Claim(s) 16 and 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 21 is rejected under 35 U.S.C. 102(b) as being anticipated by Nguyen et al. (US 5,712,851).

**Regarding claim 21**, Nguyen teaches a method for use in a processor for scheduling data blocks for transmission from a plurality of transmission elements (col. 2, lines 1-24), the method comprising: establishing a traffic shaping requirement for the transmission of the data blocks from the transmission elements (col. 4, lines 39-45); and scheduling the data blocks for transmission in a manner that substantially maintains the traffic shaping requirement in the presence of collisions between requests from the transmission elements for each of one or more transmission time slots, utilizing at least one time slot table, the time slot table comprising a plurality of locations, each of the locations corresponding to one of the transmission time slots, and further utilizing a linking of colliding transmission elements (Figs. 1 and 2; col. 4, lines 39-60).

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1 – 15, 18 – 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen et al. (US 5,712,851) in view of Lauffenburger et al. (US 6,661,774).

**Regarding claim 1**, Nguyen teaches scheduling circuitry (Fig. 1; processor 24) for scheduling data blocks for transmission from a plurality of transmission elements (col. 2, lines 1-24); establishing a traffic shaping requirement for the transmission of the data blocks from the transmission elements (col. 4, lines 39-45); wherein the scheduling circuitry is configured for utilization of at least one time slot table, the time slot table comprising a plurality of locations, each of the locations corresponding to a transmission time slot, the scheduling circuitry being operative in conjunction with the time slot table to schedule the data blocks for transmission in a manner that substantially maintains the

traffic shaping requirement established by the traffic shaping circuitry in the presence of collisions between requests from the transmission elements for each of one or more of the time slots, through the use of a linking of colliding transmission elements (Figs. 1 and 2; col. 4, lines 39-60).

Although Nguyen describes establishing a traffic shaping requirement, Nguyen fails to explicitly disclose traffic shaping circuitry coupled to the scheduling circuitry. It would have been obvious to include circuitry for traffic shaping when a traffic shaping requirement exists.

In addition, Lauffenburger teaches traffic shaping circuitry (Fig. 1; controller 22) coupled to the scheduling circuitry (scheduler 24).

In view of this, it would have been obvious to one skilled in the art to modify Nguyen's system by incorporating Lauffenburger's traffic shaping circuitry coupled to the scheduling circuitry, so as provide circuitry for managing the transmission requests.

**Regarding claim 2**, Nguyen teaches a time slot table (Fig. 2), however fails to explicitly disclose the time slot table stored at least in part in an internal memory of the processor. Examiner takes official notice that it is well known in the art for a time slot table to be stored in an internal memory of a processor. It would have been obvious to include a time slot table in an internal memory of a processor, for the purpose of queuing data in a table that exists inside of the processor.

**Regarding claim 3**, Nguyen teaches a time slot table (Fig. 2), however fails to explicitly disclose the time slot table stored at least in part in an external memory coupled to the processor. Examiner takes official notice that it is well known in the art for a time slot

table to be stored in an external memory coupled to a processor. It would have been obvious to include a time slot table in an external memory coupled to a processor, for the purpose of queuing data in a table that exists outside of the processor.

**Regarding claim 4**, Nguyen teaches a given one of the locations in the time slot table storing an identifier of one of the transmission elements that has requested transmission of a block of data in the corresponding time slot (col. 2, lines 53-57).

**Regarding claim 5**, Nguyen teaches one or more of the data blocks comprising data packets (col. 2, lines 15-19).

**Regarding claim 6**, Nguyen teaches the established traffic shaping requirement is substantially maintained by linking together identifiers of transmission elements generating requests that collide for a given time slot, from a single entry in the corresponding table location, and then scheduling the requesting elements for transmission in the order in which they are linked (col. 4, lines 31-60).

**Regarding claim 7**, Nguyen teaches the scheduling circuitry providing dynamic maintenance of the time slot table such that identifiers of requesting transmission elements are entered into the table locations on a demand basis (col. 4, lines 61-67; col. 5, lines 1-8).

**Regarding claim 8**, Nguyen teaches identifiers of the transmission elements comprising a structure for allowing a given one of the transmission element identifiers to be linked to another of the transmission element identifiers (col. 4, lines 31-38).

**Regarding claim 9**, Nguyen teaches the event of a collision between multiple transmission elements requesting a given one of the time slots, an identifier of a first

one of the requesting transmission elements is entered into the corresponding location in the time slot table, and that identifier is linked to an identifier of a second of the requesting transmission elements, with similar linking between the identifier of the second requesting transmission element and an identifier of any subsequent one of the requesting transmission elements, a linked list of the multiple requesting elements thereby being created for the corresponding location in the time slot table (Fig. 2; col. 4, lines 61-67; col. 5, lines 1-29).

**Regarding claim 10**, Nguyen teaches upon transmission of a data block from one of the requesting transmission elements in the linked list of elements, a determination is made as to whether there are any further elements linked to that element, and if there are any further elements, the identifier of the next such element is determined and that identifier is written into the corresponding location in the time slot table (col. 5, lines 9-29).

**Regarding claim 11**, Nguyen teaches the scheduling circuitry maintaining a set of pointers for the time slot table, the set of pointers comprising one or more of: a current pointer pointing to the next location in the time slot table for which a data block will be transmitted (current cell time pointer - CCTP; col. 4, lines 50-55); an actual pointer pointing to the location in the time slot table corresponding to actual time (current slot pointer - CSP; col. 4, lines 52-55).

Nguyen fails to explicitly disclose a free pointer pointing to the next location in the time slot table that is a free entry with no requesting transmission element assigned thereto.

However, Examiner takes official notice that free pointers are well known in the art for indicating empty slots. Thus, it would have been obvious to one skilled in the art to include a free pointer for pointing to an entry that was free to receive an assignment.

**Regarding claim 12**, Nguyen teaches in the event of a collision between multiple transmission elements requesting a given one of the time slots, a linked list of identifiers of the multiple requesting elements is created, and the current pointer continues to point to the corresponding location in the time slot table until each of the multiple requesting transmission elements has transmitted a data block (col. 4, lines 61-67; col. 5, lines 1-29).

**Regarding claim 13**, Nguyen teaches the actual pointer advancing by one table location for each of the data blocks transmitted (col. 4, lines 52-55).

**Regarding claim 14**, Nguyen teaches the current pointer advancing by one table location after each of the requesting transmission elements in the linked list associated with a given table location has transmitted a data block (col. 4, lines 53-65).

**Regarding claim 15**, Nguyen teaches current pointers and actual pointers, however fails to explicitly disclose a free pointer. As mentioned above in the rejection of claim 11, free pointers are well known in the art. It would have been obvious to one skilled in the art to increment a current pointer and free pointer to coincide with an actual pointer, if the current pointer and the free pointer point to the same location in the time slot table and the actual pointer points to a different location in the time slot table, since both the current and free pointer indicates the next slot to be transmitted and the actual pointer



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indicates the actual slot transmitting at that time. Thus, all pointers are pointing to a transmitting slot.

**Regarding claim 18**, Nguyen and Lauffenburger teach scheduling circuitry and traffic shaping circuitry. Nguyen fails to explicitly disclose a transmit queue coupled to the scheduling circuitry and the traffic shaping circuitry, the transmit queue supplying time slot requests from transmission elements to the scheduling circuitry in accordance with the traffic shaping requirement established by the traffic shaping circuitry.

However, Lauffenburger teaches a transmit queue (memory 12) coupled to the scheduling circuitry (scheduler 24) and the traffic shaping circuitry (controller 22), the transmit queue supplying time slot requests from transmission elements to the scheduling circuitry in accordance with the traffic shaping requirement established by the traffic shaping circuitry (col. 3, lines 41-53).

In view of this, it would have been obvious to one skilled in the art to modify Nguyen's system by include a transmit queue coupled to the scheduling circuitry and traffic shaping circuitry, so as to provide transmission requests to the scheduler.

**Regarding claim 19**, Nguyen teaches the processor comprises a network processor configured to provide an interface for data block transfer in a network. Nguyen fails to explicitly disclose data block transfer between a network and a switch fabric. Examiner takes official notice that it data block transfers between a network and a switch fabric are well known in the art. Thus, it would have been obvious to one skilled in the art to provide such data block transfer for the purpose of switching data through a switch fabric.

**Regarding claim 20**, Nguyen teaches the processor is configured as an integrated circuit (Fig. 3).

**Regarding claim 22**, Nguyen teaches the same limitations described above in the rejection of claims 1 and 21. Nguyen teaches a scheduler comprising a processor for scheduling data blocks for transmission from a plurality of transmission elements, utilizing at least one time slot table, the time slot table comprising a plurality of locations, each of the locations corresponding to a transmission time slot (Figs. 1 and 2).

Nguyen fails to explicitly disclose a machine-readable storage medium for use in conjunction with a processor, the medium storing one or more software programs for use in scheduling data blocks. However, Examiner takes official notice that it is well known in the art for storage mediums to store software programs and operate with processors.

Therefore, it would have been obvious to one skilled in the art to include such storage medium for the purpose of executing the programmed functions.

#### ***Allowable Subject Matter***

4. Claims 16 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rhonda Murphy whose telephone number is (571) 272-3185. The examiner can normally be reached on Monday - Friday 8:00 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on (571) 272-3126. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Rhonda Murphy  
Examiner  
Art Unit 2616

RM

  
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